Institute for Materials Science

UNCLASSIFIED

Institute for Materials Science Lecture Series

Dr. Jason N. Hancock
University of Connecticut

Critical Soft Modes Observed by Inelastic X-Ray Scattering

Tuesday, August 11, 2015
2:00 - 3:00pm
MSL Auditorium (TA-03, Bldg. 1698, Room A103)

Abstract: We use very high resolution inelastic X-ray scattering to explore the lattice dynamics of an unusual insulating material, ScF3, which not only has strong negative thermal expansion (volume expansion is -34ppm/K), but also features an extremely robust high symmetry phase, remaining cubic with 4-atom unit cell from its high melting point of 1800K down to the lowest measured temperature of 0.4K. We show that the lattice excitations soften almost completely as temperature is lowered toward zero, and the role of quantum fluctuations is significant. Broad connections to structural instabilities underpinning complex behavior in perovskite materials will be explored.

For general information contact Caryll Blount, IMS Administrator
caryll@lanl.gov * 665-3950

Hosted by the Institute for Materials Science - Alexander Balatsky